

Shown in FIG. 7 is a [A] Hall effect current sensor 35 [(not shown)] positioned to detect the DC or AC current differences in the bifurcated wires 20 and 22.

### In the Claims

Please amend claims 1, 9, 17 and 25 as follows:

1. (amended) A zone arc fault detection system for detecting faults in a defined zone of an electrical circuit, such as an aircraft circuit, comprising:

a pair of substantially identical parallel insulated load conductors for each zone in which arcing is to be detected, thereby defining a detection zone comprising the length of said parallel conductors between end points where the two conductors are coupled together;

a current sensor operatively associated with each said pair of parallel load conductors, said current sensor and said conductors being respectively configured and arranged such that the current sensor produces a signal representative of [a] the difference in the current flow in the two conductors.

9. (amended) The system of claim 1 wherein said current sensor comprises a magnetic core and a coil wound around said core, said load conductors being operatively coupled with [conductors wound around a magnetic core] said coil such that magnetic fields of said conductors oppose each other.

17. (amended) A method for detecting arcing faults in a defined zone of an electrical circuit, such as an aircraft circuit, comprising:

splitting a load conductor in each said defined zone into a pair of substantially identical parallel insulated conductors, thereby defining a detection zone comprising the length of said parallel conductors between end points where the two conductors are coupled together;

providing a current sensor operatively associated with each said pair of parallel conductors; and

configuring and arranging a current sensor and said conductors such that the current sensor produces a signal representative of [a] the difference in the current flow [between] of the two conductors.